FIG. 1A

```
┌──────────────────────────────────────────────────────┐
│                                                        │
│   USER DATABASE        DB2                             │
│                                                        │
│                                                        │
│   USER NAME               LOG-IN SESSION              │
│                        TIMEOUT TIME LIMIT (SEC)       │
│   USER1                    120                         │
│   USER2                    240                         │
│   USER3                    60                          │
│                                                        │
│   ...                      ...                         │
│                                                        │
└──────────────────────────────────────────────────────┘
```
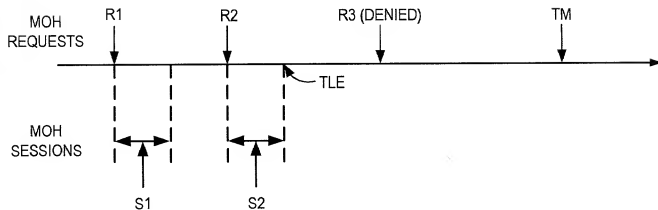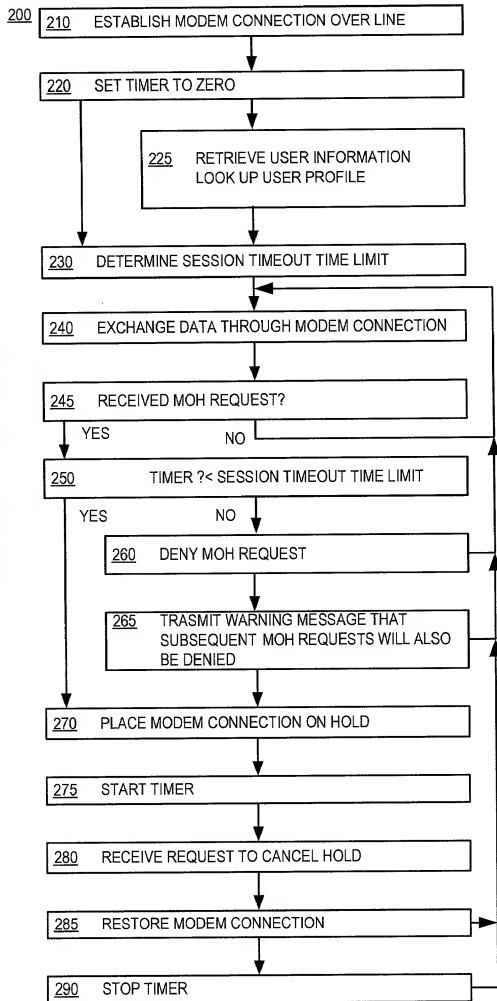
FIG. 1B

MOH
REQUESTS

R1   R2   R3 (DENIED)   TM

— TLE

MOH
SESSIONS

S1   S2

FIG. 1C

200

210 ESTABLISH MODEM CONNECTION OVER LINE

220 SET TIMER TO ZERO

225 RETRIEVE USER INFORMATION
LOOK UP USER PROFILE

230 DETERMINE SESSION TIMEOUT TIME LIMIT

240 EXCHANGE DATA THROUGH MODEM CONNECTION

245 RECEIVED MOH REQUEST?

YES   NO

250 TIMER ?< SESSION TIMEOUT TIME LIMIT

YES   NO

260 DENY MOH REQUEST

265 TRASMIT WARNING MESSAGE THAT
SUBSEQUENT MOH REQUESTS WILL ALSO
BE DENIED

270 PLACE MODEM CONNECTION ON HOLD

275 START TIMER

280 RECEIVE REQUEST TO CANCEL HOLD

285 RESTORE MODEM CONNECTION

290 STOP TIMER

FIG. 2

Inventors: Alex Urquizo and Vincent T. Grove
Title: DEVICES, SOFTWARES AND METHODS FOR SELECTIVELY LIMITING THE TOTAL
MODEM-ON-HOLD TIMEOUT TIME OF A SINGLE LOG-IN SESSION
Our Do. No. 2705-181
Page 4 of 5

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Portland, OR 97205
503-222-3613

300

310 ESTABLISH MODEM CONNECTION WITH NETWORK DEVICE OVER TELEPHONE LINE

320 EXCHANGE DATA OVER MODEM CONNECTION

330 RECEIVE LINE REQUEST TO TEMPORARILY DISCONTINUE THE MODEM CONNECTION FOR RELEASING THE TELEPHONE LINE FOR VOICE CALL

340 HAS WARNING MESSAGE BEEN RECEIVED TO NOT MAKE ANY MORE MOH REQUESTS?

NO   YES

350 DO NOT TRANSMIT MOH REQUEST THROUGH TELEPHONE LINE

360 NOTIFY USER

370 TRANSMIT MOH REQUEST THROUGH TELEPHONE LINE

375 PLACE MODEM CONNECTION ON HOLD

380 DETERMINE WHEN VOICE CALL ENDS

390 RESTORE MODEM CONNECTION

FIG. 3

Inventors: Alex Urquizo and Vincent T. Grove
Title: DEVICES, SOFTWARES AND METHODS FOR SELECTIVELY LIMITING THE TOTAL
MODEM-ON-HOLD TIMEOUT TIME OF A SINGLE LOG-IN SESSION
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MH bits LSB:MSB			
0:3	Fill bits: 1111		
4:11	Frame sync: 01110010, where the left-most bit is first in time		
12:15	Signal indication bits:		
	0011	Mhreq	Request remote modem to go on-hold
	0101	Mhack	Indicate agreement to go on hold and timeout
	0111	Mhnack	Deny on-hold, request cleardown or fast reconnect
	1001	MHclrd	Request cleardown
	1011	Mhcda	Acknowledge cleardown
	1101	MHfrr	Request fast reconnect
16:19	Information bits: For signals Mhreq, ~~Mhnack~~, MHcda and MHfrr repeat signal indication bits For Mhack:		
	16:19	T1 – Timeout period for on-hold	
	For MHclrd:		
	16:19	0101 Cleardown due to incoming call 0110 Cleardown due to outgoing call 1010 Cleardown due to other reason	
	For Mhnack:		
	16:19	0101 Modem on Hold denied. Subsequent requests will be denied until current modem session terminates. 0111 Modem on Hold denied. Try again later.	
20:35	CRC		
36:39	Fill bits: 1111		

NOTE 1 - Bit combinations not defined in bits 12-15 are reserved for the ITU. MH sequences with undefined bit combinations should be ignored.

NOTE 2 - Bit combinations not defined in bits 16-19 for MHclrd and Mhnack are reserved for the ITU and should not be interpreted by the receiving modem.

FIG. 4